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Notice: This application is as filed and may therefore contain an  
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July 6, 1937.

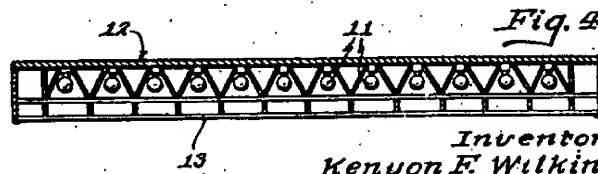
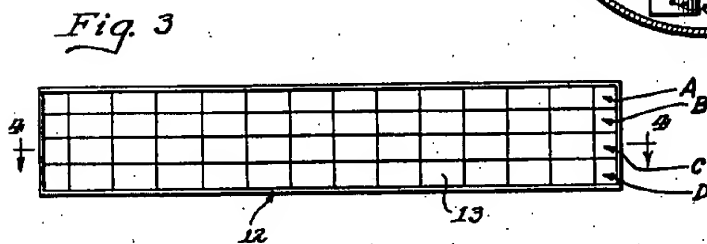
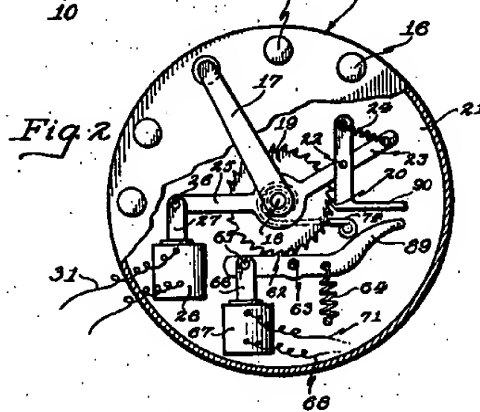
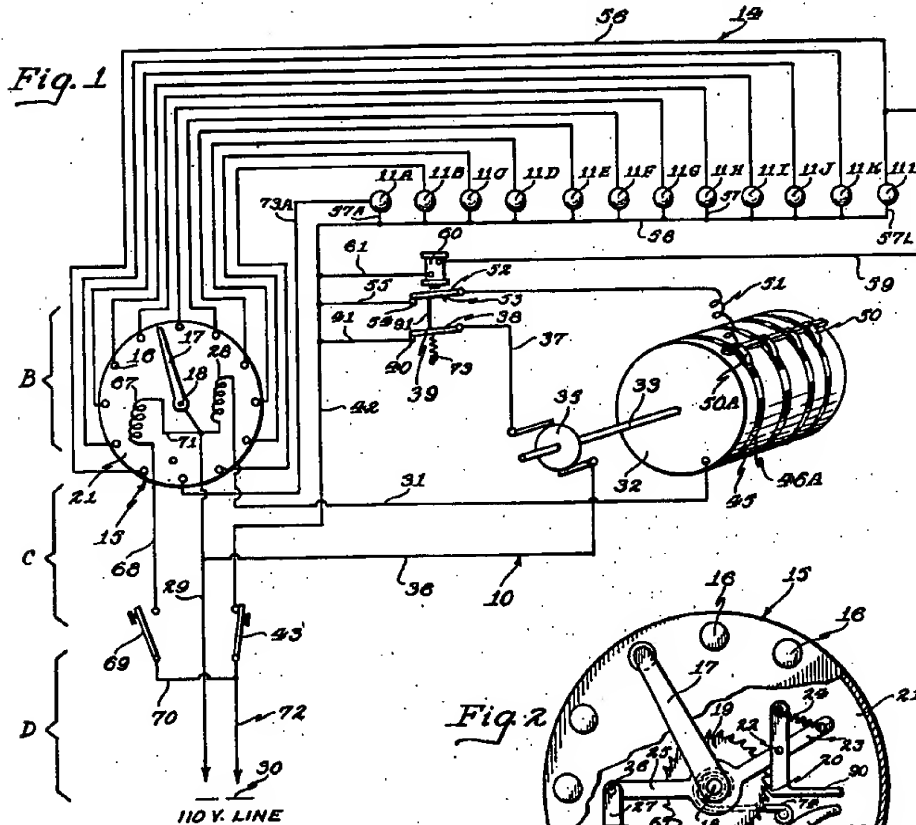
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2,085,884

AMUSEMENT APPARATUS

Filed May 23, 1936

2 Sheets-Sheet 1



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2,085,884

AMUSEMENT APPARATUS

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2 Sheets-Sheet 2

Fig. 7

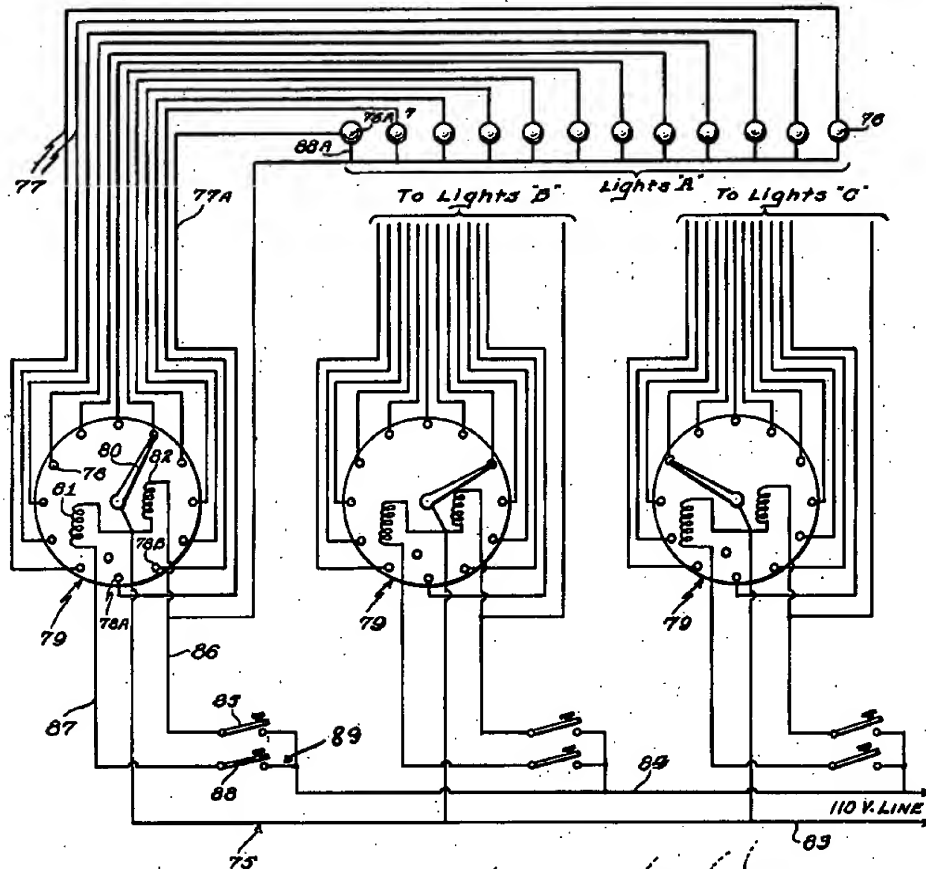


Fig. 5

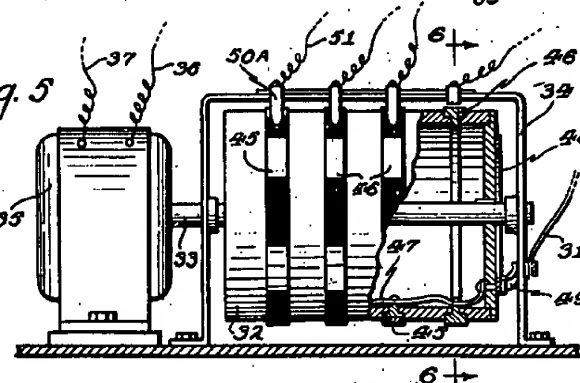
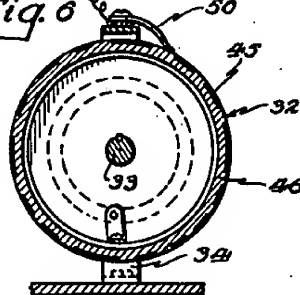


Fig. 6



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## UNITED STATES PATENT OFFICE

2,085,884

## AMUSEMENT APPARATUS

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Application May 23, 1936, Serial No. 81,483

4 Claims. (Cl. 177-384)

This invention relates to amusement apparatus.

It is an object of this invention to provide an improved amusement apparatus which is relatively simple and inexpensive in construction and efficient in use.

Another object of the present invention is to provide an amusement apparatus in which the progressive movement of racing characters is shown by the successive illumination of electric lights arranged in parallel rows.

A further object of the invention is to provide a novel device which may be used in theaters, restaurants, and other public places for showing the progressive movements of racing characters by means of electric lights or analogous devices which are arranged in parallel horizontal rows.

An additional object of the present invention is to provide a novel device by means of which the general progress or movements of horses or other racing objects about a race track, as well as the movements of the racing characters relative to each other, may be shown at a point remote from the track by means of electric lights, or analogous indicating devices, which are arranged in parallel horizontal rows, the said electric lights or analogous indicating devices being controlled by means of keys or equivalent manual control devices which are arranged at a point adjacent to the race track.

Another object of the present invention is to provide a novel mechanism which is actuated by the illumination of the last or end light in each row of the same and which when thus actuated stops the operation of the device.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which:

Fig. 1 is a diagrammatic view showing a preferred form of the electrical circuit embodied in the new device for successively illuminating the electric lights so as to indicate the general and relative movements of the racing characters;

Fig. 2 is an end elevational view, partly in section, showing a part of the means for closing a circuit to the electric lights and showing the resetting mechanism for the said circuit-closing means;

Fig. 3 is a front elevational view showing a preferred form of the housing which encloses the

bank of electric lights which are embodied in the device shown in Figs. 1 and 2;

Fig. 4 is a sectional view on line 4-4 in Fig. 3;

Fig. 5 is a view, partly in section and partly in elevation, of the means embodied in the invention, shown in Figs. 1 to 4 inclusive, for controlling the operation of the circuit-closing means;

Fig. 6 is a vertical sectional view on line 6-6 in Fig. 5; and

Fig. 7 is a diagrammatic view of a modified form of the invention.

A preferred form of the present invention as shown in Figs. 1 to 6 inclusive, is therein generally indicated at 10, and comprises a bank of indicating devices in the form of electric lights 11 which are arranged in parallel horizontal rows and within a casing or housing 12 (Fig. 3), only one row of the indicating devices or lights 11 being shown (Figs. 1 and 4) but it being understood that any desired number of such rows (of which four are indicated, Figs. 1 and 3, by the letters "A", "B", "C" and "D"); may be arranged within the housing or casing 12 behind the front wall 13 thereof on which any desired indicia may be printed or otherwise inscribed to interpret or indicate the progress or movement of the racing characters which are represented by the successive illumination of the lights 11.

Each of the rows ("A", "B", "C", and "D") of indicators or lights 11 is arranged in an electrical circuit which is generally indicated at 14 (Fig. 1) and each of these circuits includes a circuit-closing device, generally indicated at 15, for controlling the illumination of the lights 11. The circuit-closing device 15 includes an annular series or row of stationary contacts 16 and a movable contact 17 which is successively engageable with the stationary contacts 16, this movable contact 17 being rotatably mounted upon a shaft 18 which is suitably journaled in a support, generally indicated at 21 (Fig. 2) and on which the stationary contacts 16 are likewise mounted. Likewise mounted on the shaft 18 is a ratchet 19 and engageable with the teeth of the ratchet 19 is a pawl 20 which is pivotally mounted between its end, as at 22, upon an arm 23 which is rotatably mounted upon, that is, "floats" on the shaft 18. Attached to one end portion of the pawl 20 is a spring 24, the other end portion of the spring 24 being attached to the arm 23.

The arm 23 has an integral extension 25 and this extension 25 is pivotally connected, as at 26, to the movable element or core 27 of a solenoid 28.

Arranged upon the shaft 18 is a coil spring 29 which has one end anchored to the support 21

and which has its other end attached to the shaft 18, this spring 76 normally urging the shaft 18 and the ratchet 19 and the movable contact 17 (clockwise, Fig. 2).

One side of the solenoid 28 is electrically connected, by means of a conductor 29, to a source of electrical energy 30 which may be an ordinary 110 v. line, and the other side of the solenoid 28 is electrically connected, by way of a conductor 31, to a control device for the circuit-closing device 15, said control device having the form of a rotary drum contactor 32 which is mounted upon a shaft 33, the shaft 33 being journaled in a suitable support 34 (Figs. 5 and 6). Operatively connected to the shaft 33 is a motor 35, which is preferably an electric motor. One side of this motor 35 is electrically connected, by way of a conductor 36 (Fig. 1), to the power intake line or conductor 29, and the other side of the motor 35 is electrically connected, by way of a conductor 37, to the movable element 38 of a switch 39, the stationary contact 40 of this switch 39 being electrically connected, by way of a conductor 41, to a conductor 42 which, in turn, is connected to a manually operable control switch 43.

Arranged on, and embedded in, the peripheral surface of the drum contactor 32 are four spaced contact rings 45, each of which includes a series of equidistantly spaced conductive segments 46 of equal length, and these contact rings 45 are electrically connected, by way of a conductor 47, to a conductive ring 48 which is mounted on the drum contactor 32 at one end thereof (Fig. 5). Engaging with this ring 48 is a brush 49 which is electrically connected, by way of a conductor 51, to one side of the solenoid 28. Engageable with each of the contact rings 45-46 is a stationary contact or brush 50 and each of these brushes 50 is electrically connected, by way of a conductor 51, with the movable element 52 of a corresponding switch 53, the stationary contact 54 of each of the switches 53 being electrically connected, by way of a conductor 55, with a conductor 42 (Fig. 1); only one of the switches 53, conductors 42, and associated parts being shown in the drawings, (Fig. 1) because the same are duplicates of each other. It is to be understood, however, that there are as many of these parts as there are contact rings 45-46 on the drum contactor 32, and rows of lights 11 (of which there are four, indicated at "A", "B", "C" and "D" in Fig. 1).

One side of each of the lights 11 is electrically connected, by way of a conductor 56, to one of the stationary contacts 16 of the circuit-closing device 15 and the other side of each of the lights 11 is electrically connected, by way of a conductor 57, to a conductor 58, and the latter, in turn, is electrically connected, by way of the conductor 42 and switch 43 to the intake line 72 (Fig. 1).

Leading from one side of the light 11 which is arranged at the end of each of the parallel horizontal rows of lights 11 (only one row being shown since these rows are duplicates of each other) is a conductor 59 and the latter, in turn, is electrically connected to one side of an electromagnet 60, the other side of the electromagnet 60 being electrically connected to the conductor 42.

Engageable with the ratchet 19 is a dog 62 which is pivotally mounted, between its ends, as at 63, upon the support 21, this dog 62 being urged into engagement with the ratchet 19 by means of a spring 64. Pivotally connected to the dog 62, as at 65, is the movable element or core 66 of a solenoid 67, one side of which is electrically connected, by way of a conductor 68, to a manually

operated switch 69 which, in turn, is connected, by way of a conductor 70 to the power intake line 42. The other side of the solenoid 67 is electrically connected, by way of a conductor 71, to one side of the solenoid 28.

The dog 62 has an arm 89 which is engageable with an arm 90 of the pawl 20, for reasons to be explained herein.

#### *Operation of the form of the invention shown in Figs. 1 to 6, inclusive*

In the use of the form of the invention shown in Figs. 1 to 6, inclusive, the casing or housing 12, containing the several rows of lights 11, may be arranged upon any desired support such, for example, as the stage of a theater, or in any other desired place, such as restaurants, amusement places, etc. The motor 35 and drum contactor 32 may then be set in operation by closing the switch 43, whereupon current will flow as follows: From the source 30, along the line 29, through the conductor 36, through the motor 35, through the conductor 37, and switch 39, into the conductor 41, and thence by way of the conductor 42, switch 43, and conductor 72 back to the current source 30, thereby setting the motor 35 and the drum contactor 32 in operation.

When the control device or drum contactor 32 is thus rotated, the brushes 50 engage the contact rings 45 and they alternately engage and disengage the conductive segments 46 in the same.

It is to be understood, in connection with the operation of the device presently to be described, that there is a row of the lights 11 associated with each of the contact rings 45-46 and brushes 50 but that only one row of such lights and associated parts is shown in the drawings since the same are duplicates of each other; and that the following explanation of the operation of the device is directed to the row of lights "A", shown in Fig. 1, and to the parts associated therewith.

Accordingly, assuming that the brush 50A is disposed in engagement with one of the conductive segments in the contact ring 46A, which corresponds to the row of lights "A", (Figs. 1 and 6) and that the parts are disposed as in Fig. 2, current will then flow as follows: From the current source 30, along the conductor 72, through the closed manual control switch 43, and conductor 42, through the conductor 51A, and lamp 11A, thence by way of the conductor 73A, to the corresponding stationary contact 16A of the circuit-closing device 15, through the movable contact 17, and thence by way of the shaft 18, and conductors 71 and 29 back to the current source 30, thus illuminating the lamp 11A, so as to indicate the start of one horse in a race, and other circuits such as that shown in Fig. 1 may be set in operation to show the start of the other horses in the race.

At the same time, that is, when the drum contactor 32 is set in operation, the solenoid 28 is energized, current then flowing as follows: From the current source 30, along the conductor 29 to one side of the solenoid 28, through the latter, thence by way of the conductor 31 to the brush 49 (Fig. 6), through the brush 49 into the contact ring 48, through the latter, thence by way of the conductor 47 to the contact ring 46A, through the latter, thence into the brush 50A, along the conductor 51, through the switch 53, which is normally closed by the spring 73, (the movable elements 38 and 52 of the switches 39 and 53 being connected, for movement as a unit, by means of a suitable connection 91) and thence by way of

the conductors 55, and 42 and switch 43 and conductor 72 back to the current source 30, thereby energizing the solenoid 28.

When the solenoid 28 is thus energized it attracts its movable element or core 27 downwardly (Fig. 2), thereby pivoting the member 23—25 and the pawl 20 carried thereby (counter-clockwise, Fig. 2) on the shaft 18. This movement of the pawl 20, which is normally urged by the spring 24, into engagement with the ratchet 19, moves the shaft 18 and the movable contact 17 carried thereby (counterclockwise, Fig. 2), a circumferential distance corresponding to the circumferential distance between two of the stationary contacts 16, thereby closing circuit to the light 11B (Fig. 1), it being understood that in the present example the foregoing circuit to the light 11A is closed and the latter is illuminated when the parts are arranged as in the drawings and the drum contactor 32 is set in operation. It will, therefore, be seen that each time the brush 50A passes over one of the non-conductive strips 45 in the contact ring 46A and into engagement or contact with the latter the foregoing circuit to the solenoid 28 will be closed and the latter will be energized so as to advance the movable contact 17 of the circuit-closing device 15 one step, that is, a circumferential step equal to the circumferential distance between two of the stationary contacts 16, and in this manner the circuits to the lights 11 are successively closed and the lights are successively illuminated from the initial light 11A to the last or end light 11L in the row of the same (Fig. 1), thus indicating or simulating the general progress or movement of a racing character such, for example, as the general movement of a horse around a race track; it being noted, in this connection, that the movements of the several horses in the race relative to each other are indicated by manually closing and opening several switches such as 43 which may be arranged at the race track itself. It will be noted, therefore, that drum contactors such as 32 will be utilized only for the purpose of illuminating the lights 11 in the several rows of the same so as to show the general movements of the horses around the track and not the movements of the same relative to each other.

After the foregoing cycle of operations of the solenoid 28 and associated parts of the circuit-closing device 15 has been repeated a number of times equal to the number of lights 11 in the corresponding row of the same, the last lamp 11L will be illuminated, whereupon current will flow as follows: From the current source 30 by way of the conductor 72 and switch 43 to the conductor 42, thence along the conductors 58 and 57L to the light 11L, through the latter, and thence by way of the conductor 59 to one side of the electromagnet 60, through the latter, and thence by way of the conductors 61 and 42, and switch 43, and conductor 72 back to the current source 30, thereby energizing the electromagnet 60. When the electromagnet 60 is thus energized it will attract the movable element 52 of the switch 53 and the movable element 52 will act, through the connection 91, to move the movable element 38 of the switch 39, against the action of the resetting spring 73; out of engagement with the contact 40, thus opening the switch 39, and thereby breaking the circuit to the motor 35, and thus stopping the operation of the latter and the control device or drum contactor 32. In this manner the drum contactor or control device 32 is stopped and the circuit-closing device 15 is prevented from fur-

ther operation as soon as the last or end light in one of the rows of parallel lights 11 is illuminated, thus indicating the finish of the race for the corresponding horse and assuring that no more lights in that row will be illuminated after the end light in the said row has been illuminated to indicate the finish of the race for the corresponding horse.

In order to reset the circuit-closing device 15 back into its initial position (as in Fig. 2) the switch 69 is manually closed, whereupon current will flow as follows: From the current source 30, through the conductor 72, through the conductor 70, switch 69, conductor 68, into the solenoid 67, through the latter, and thence by way of the conductors 71 and 29 back to the current source 30, thereby energizing the solenoid 67. When the solenoid 67 is thus energized it will attract its movable element or core 68 (downwardly as seen in Fig. 2) thereby pivoting the latch dog 62, at 63 (counterclockwise, Fig. 2) out of engagement with the teeth of the ratchet 19, and at the same time causing the end portion 89 of the dog 62 to engage the arm 90 of the pawl 20 and thereby pivot the latter, at 72, out of engagement with the teeth of the ratchet 19, whereupon the tensioned resetting spring 74 will move the shaft 18 and contact 17 back into its initial position (clockwise, Fig. 2), thus resetting the circuit-closing device 15 back to its initial position and thus extinguishing the lights 11.

A modified form of the invention is shown in Fig. 7 and this form of the invention is also especially adapted for use in showing in public places, such for example, as restaurants, billiard halls, and other places of amusement etc., the movements of horses or other racing characters racing at a distant track.

The modified form of the invention which is shown in Fig. 7 is therein generally indicated at 75, and comprises a bank or group of lights 76 which are arranged in parallel horizontal rows (only one row of the same being shown since these rows are duplicates). One side of each of the lights 76 is electrically connected, by way of a conductor 77, to one of the stationary contacts 78 of a circuit-closing device which is generally indicated at 79 and which is similar to the circuit-closing device 15 which is embodied in the preferred form of the invention shown in Figs. 1 to 6 inclusive; the said control device 79 including a movable contact 80 which is successively engageable with an annular row of stationary contacts 78, this movable contact 80 being moved successively into engagement with the stationary contacts 78 by means of a solenoid 82, (and associated parts, not shown) which correspond to the solenoid 28 and associated parts which are embodied in the preferred form of the invention shown in Figs. 1 to 6 inclusive. The circuit-closing device 79 also includes a resetting solenoid 81 which corresponds to the solenoid 67 in the form of the invention shown in Figs. 1 to 6 inclusive.

The source of current for operating the device shown in Fig. 7 is indicated as being an ordinary 110 v. line and one side of this line is electrically connected, by way of a conductor 83, to the movable contact 80 of the circuit-closing device 79. The other side of the current source is electrically connected, by way of a conductor 84 with one side of a switch 85, the other side of this switch 85 being electrically connected, by way of a conductor 86 with one side of the solenoid 82.

One side of the solenoid 81 is electrically con-

ected, by way of a conductor 87 with one side of a resetting switch 88 and the other side of this resetting switch 88 is electrically connected, by way of a conductor 89, to the conductor 84.

The modified form of the invention shown in Fig. 7 is, like the form of the invention shown in Figs. 1 to 6, inclusive, primarily designed for showing, in public places such, for example, as restaurants, amusement places, etc., the movements of racing characters such as horses, engaged in a race at a distant or remote point and to this end the manual control keys or control switches 85 may be arranged in a bank of the same upon the desk of an operator situated at the race track, and the rows of lights 76 may be arranged in a public place as above set forth.

Accordingly, when the operator at the track desires to show the progress or movements of the horses at the race track he will close the starting or control switches 85, which may be of any desired type, whereupon current will then flow as follows, (it being understood that the description to follow is limited to one unit, that is, to one control switch 85 and one row of lights 76): From the current source, through the conductor 83, into the movable contact 80 of the circuit-closing device 78, thence into the stationary contact 78A (the movable contact 80 being at this time disposed in its initial position and in engagement with the stationary contact 78A), thence by way of the conductor 77A, to one side of the light 76A, through the light 76A, and thence by way of the conductors 88A, 88, 88, switch 85, and conductor 84 back to the current source, thus illuminating the initial lamp 76A, in the row of the same, so as to indicate the start of a race.

At the same time, that is, when the switch 85 is closed current will flow through the solenoid 82 as follows: From the current source, along the conductor 83, through the solenoid 82, thence by way of the conductor 86 to one side of the switch 85, through the latter, and thence by way of the conductor 84 back to the current source, thereby energizing the solenoid 82.

When the solenoid 82 is thus energized it will act (through a mechanism similar to that shown in Fig. 2) to move the movable contact 78A out of engagement with the stationary contact 78A and into engagement with the next adjacent stationary contact 78B thereby closing circuit to and illuminating the next adjacent lamp 76B so as to indicate the general progress or movement of the horse or other racing object during the race, it being understood that there may be as many keys or other control devices 85 as there are rows of lights 76 and horses or racing characters in the race so that the progress or movement of the horses relative to each other may be shown at a remote point by selectively operating the manual remote control devices or keys 85.

While I have illustrated and described preferred forms of construction for carrying my invention into effect, these are capable of variation and modification, without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In an apparatus of the character described, the combination of: a bank of electric lights arranged in parallel horizontal rows; means for producing impulse current in a plurality of circuits corresponding to the plurality of the said rows of lights; means, including the winding of a stepping magnet and switches individual to all of the lights in any one of said rows of lights, controlled by said stepping magnet, for energizing successively the said lights in any of the said rows of lights; and means including manually operable switches individual to the plurality of circuits, for completing impulse energization thereof at will.

2. In an apparatus of the character described, the combination of: a bank of electric lights arranged in parallel horizontal rows; means, including a rotary drum contactor having a plurality of contact rings thereon corresponding to the number of the said rows of lights and each of said rings including a series of spaced conductive segments of uniform length, for producing impulse current in a plurality of circuits corresponding to the plurality of the said rows of lights; means, including the winding of a stepping magnet and switches individual to all of the lights in any one of said rows of lights, controlled by said stepping magnet, for energizing successively the said lights in any of the said rows of lights; and means including manually operable switches individual to the plurality of circuits, for completing impulse energization thereof at will.

3. In an apparatus of the character described, the combination of: a bank of electric lights arranged in parallel horizontal rows; means for producing impulse current in a plurality of circuits corresponding to the plurality of the said rows of lights; means, including the winding of a stepping magnet and switches individual to all of the lights in any one of said rows of lights, controlled by said stepping magnet, for energizing successively the said lights in any of the said rows of lights; means including manually operable switches individual to the plurality of circuits, for completing impulse energization thereof at will, and means energized by the illumination of the last or end light in each of the said rows of lights for stopping the operation of the said first-named means.

4. In an apparatus of the character described, the combination of: a bank of electric lights arranged in parallel horizontal rows; means, including a rotary drum contactor having a plurality of contact rings thereon corresponding to the number of the said rows of lights and each of said rings including a series of spaced conductive segments of uniform length, for producing impulse current in a plurality of circuits corresponding to the plurality of the said rows of lights; means, including the winding of a stepping magnet and switches individual to all of the lights in any one of said rows of lights, controlled by said stepping magnet, for energizing successively the said lights in any of the said rows of lights; means including manually operable switches individual to the plurality of circuits, for completing impulse energization thereof at will; and means energized by the illumination of the last or end light in each of the said rows of lights for stopping the operation of the said rotary drum contactor.

KENYON F. WILKINSON.